THE

VETERINARY JOURNAL

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MARCH, 1926.

General Articles

SOME IMPORTANT SHEEP DISEASES.

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During the last few years sheep prices have attained such a high level that agriculturalists have given great prominence to the necessity for reduction in the losses caused by sheep diseases. Only those who have an intimate acquaintance with sheep farming realise how great these losses are. At a very conservative estimate they represent an annual loss of many thousands of pounds sterling to the country. At a time when imports are soaring and when political economists are urging the need for their reduction, these losses are a very serious matter. They represent a great deal of fruitless effort and to the extent to which they are preventable they represent waste which in the present stringent times cannot be countenanced. The death rate is so high that many sheep farmers speak of it as so many per score, and in some parts of the country a loss of one per score, or 5 per cent., is considered reasonable. It is only when it exceeds that number that it is considered excessive. This is in very marked contrast to horse and cattle raising.

The veterinarian who undertakes the treatment of sheep diseases has many limitations. The first trouble is that many of the obvious methods for particular diseases would be uneconomical for the conditions of sheep farming. In every instance he has to consider the conditions in which the particular herd is managed. These conditions vary between two extremes from those of the Blackface

sheep which run on some of the vast and wild hill farms in Scotland to the breeds which are kept in pens in the South. On many of the mountainous tracts, gathering the sheep for any special purpose is a very difficult matter and cannot be lightly undertaken. On many such farms a small army would be required to gather the sheep so that none escape notice. It is conditions such as these which have prevented the eradication of sheep scab from this country. Of course, prejudice and custom are often the cause of objections which are raised and when the veterinarian's reasons are sound they can often be overcome. An instance of this arose early in the work of this Association, when Professor Gaiger was starting the investigations into the causation of braxy, which have had such fruitful results. A vaccine was prepared for injection on two occasions at a week's interval. Many sheep farmers said it would not be practical to go to the trouble of gathering the sheep on two occasions and pleaded strongly for a vaccine which would confer sufficient immunity in one inoculation. Sound reasoning gradually wore down those arguments, and nowadays two inoculations are carried out regularly. It was merely a case in which the return was found to be sufficient to overcome prejudice and custom.

In the case of non-contagious diseases in which only an odd individual is affected, it is usually more economical to send it to the butcher, or even to kill it and bury it if inedible, rather than incur a bill for veterinary attendance.

In a very large number of cases veterinary attendance could not easily be obtained in sheep-farming districts owing to long distances and bad communications.

While sheep farmers as a whole are extraordinarily efficient in the execution of the general work of their farms, it is often surprising how little they know of many things which modern science has introduced for the prevention and cure of disease.

There appears to be reason to believe that a good many sheep farms are suffering from the generations of intensive sheep breeding which have been carried out on them. This is especially the case on some of the hill farms on which sheep have been reared continuously.

Impoverishment of the pastures would appear to be a likely explanation. In the case of some farms which have been in the same family for very long times, there is a definite history that two or three generations ago the land successfully carried far more sheep-stock than it will do now.

Navel-Ill.

This is met with fairly frequently, but is generally associated with bad hygienic conditions such as permanent lambing pens which have not been properly disinfected. This association has been accumulating data for some years as to the causal organisms in different cases of the disease. As it can generally be controlled by the application of the usual measures which are now so well known, further intensive work has been deferred until some of the more pressing problems have been dealt with.

Lamb Dysentery.

This disease is a terrible scourge in the Northern Counties of England and some of the bordering counties of Scotland. The seriously affected area is very confined to these counties, but there are isolated centres of the disease on farms as far distant as Cornwall. Northumberland appears to be its home and for many years it was spoken of as the Northumberland lamb disease.

It is quite impossible to estimate the number of lambs which die annually from lamb dysentery, but it runs into many thousands.

It attacks lambs in their first fortnight of life and occurs chiefly in the flocks of Cheviot and Scotch Blackface sheep which are so largely bred in this area. On infected farms the losses all round are very high and may be anything up to 33 per cent. of the lamb crop. There are sheep farms which are so badly affected that now no lambs are bred on them.

Symptoms.—The affected lamb is dull and does not suck readily. It lies down a good deal and fails to follow the ewe when she moves off. There is often evidence of abdominal pain. On getting up an affected lamb stretches itself stiffly. There is generally evidence of diarrhœa and the tail is matted with a mucous discharge. Frequently the discharge is bloodstained. On the other hand, it is often surprising how often there is absence of external evidence when the lesions are found to be very advanced on post-morten examination.

Lesions.—Small multiple ulcers are produced in the intestines. The surface becomes necrotic and covered with a diphtheritic deposit. There is a halo of intense inflammation around the edges. These ulcers frequently coalesce and form larger ones. They tend to burrow into the depths of the intestinal wall and perforations occur. More frequently adhesions are formed to an adjoining loop of intestine. In consequence the intestines are frequently found to be a knotted adherent mass.

ETIOLOGY.—The great difficulty which research workers have encountered in the investigation of this disease is failure to reproduce it experimentally. This renders the bacteriological findings inconclusive. At the same time the whole history of the disease as it occurs on the infected farms, all agrees very closely with the findings of this laboratory, that the disease is of bacterial origin and that the bacteria are carried in the soil.

Professor Gaiger has most aptly described the ulcers as war wounds of the bowel. In this case a coliform bacillus takes the place of the projectile and sets up the initial injury—a catarrh. Soil anærobes then produce the ulcer. Death occurs so rapidly—frequently within 24 to 36 hours of birth—that it appears to be likely that a toxin is the actual cause of death. B. coli, B. Welchii, V. septique and cocci have been isolated from the tissues of infected lambs.

METHOD OF INFECTION.—Many sheep farmers believe that infection occurs before birth, because some lambs die so soon after birth. No evidence of such ante-natal infection has ever been found, although it has been looked for. Ewes whose lambs died in the previous year from lamb dysentery on bad lamb dysentery farms, have been killed while in an advanced stage of pregnancy and the uterus and its contents have been submitted to thorough bacteriological examination. Without exception, all were found to be sterile and the fœtuses were found to be free of any lesions of lamb dysentery.

If infection occurred *in utero*, it would be reasonable to expect that some disease process would be set up in the uterus and that in all probability abortions would be one of the results of such an infection. Neither abortions nor uterine disease are found to be a feature of lamb dysentery farms.

A word of warning is here necessary. The only typical naked eye feature of the lesions of lamb dysentery is the ulcers. It is conceivable that in the milder stages of the infection, actual ulceration may not occur, but an observer would be very rash to draw any conclusions from cases in which the typical ulcers were absent. Varying stages and degrees of inflammation can be produced by many agents, but the same cannot be said of the ulcers of lamb dysentery. This point is of special importance in connection with conclusions drawn from experiments upon the artificial reproduction of the disease.

METHODS OF DEALING WITH THE DISEASE.—On the basis that the disease is of bacterial origin and that infection is carried in the soil, one must regard the lamb which is affected with the disease as the most potent source of pollution of the soil. It is reasonable to assume that access to the tissues of the lamb raises the virulence

of the causal organisms and that during the period of the lambing season, access to a series of lambs acts in the same way as the classical method of " passage " which is used in laboratories for this purpose. It has been found that the ewe carries the infection, but this is probably merely to the extent to which she gets it herself from the soil. Probably as a rule, it is only during the lambing season that the infection is highly dangerous, *i.e.* when there are bacteria in the soil whose virulence has been raised by " passage " and when there are highly susceptible individuals, *i.e.*, lambs to carry it.

If the infection were easy at other seasons of the year, the enormous movements of sheep which occur, would spread it rapidly all over the country.

The evidence is all to the effect that it is steadily but slowly spreading.

The usual history on a farm is that one year there were just a few deaths, say about a dozen, and that the next year there were a few more and so on until by the seventh or eighth year about a third of the lamb crop is lost. Eventually the disease settles down to a steady loss of 10 to 20 per cent.

(*a*) *Inoculation of the Pregnant Ewes.*—This has been tried, but so far when carried out on severely infected farms and with real controls, the results have been disappointing. It is difficult to confer serviceable immunity on the fœtus by inoculating the dam.

(*b*) *Inoculation of the Newly-Born Lambs.*—The results obtained from this method of inoculation are distinctly hopeful. Last year this Association prepared a combined serum against B. coli and the toxins of B. Welchii and V. septique. On some farms it was successful, on others it appeared to do some good and on others it did not appear to exert any beneficial effect. In all cases it was clear that to be of any use, the inoculation had to be carried out very soon after birth.

Lamb dysentery is a disease in which a serum should be the ideal method of conferring immunity, because immediate protection is required and after the tenth day of a lamb's life, the danger is practically over.

The great difficulty in dealing with a disease caused by a member of the B. coli group by means of a serum or a vaccine is the apparent multiplicity of strains which are antigenically each distinct from the other. In consequence a serum or vaccine which is efficacious on one farm may be quite useless on others.

(*c*) *General Preventive Measures.*—If the soil infection theory is correct, the infected lamb must be considered the great danger, because it raises the virulence of the bacteria. Therefore, all possible

precautions should be taken to limit further infection of the soil by burying, disinfection, etc. There is evidence that ploughing and cropping cleanses the soil, but this is impossible on many sheep farms.

This year a Joint Committee, under Sir Stewart Stockman, has been formed for the investigation of lamb dysentery. The laboratories of the Ministry of Agriculture, Institute of Anima! Pathology, Cambridge, and Animal Diseases Research Association are carrying out a combined research scheme.

Braxy.

This disease affects hoggs during their first autumn and winter. It has a very localised distribution, but in some places causes a very high death rate.

It has now been proved that the causal organism is the V. septique, and it appears to be quite clear that the invasion of the wall of the fourth stomach is favoured by any condition which causes temporary debility of the part. Thus, hard frost is the usual associated cause in this country. The hoggs eat the frosted herbage, which chills the rumen and as the omasum lies adjacent to it, the cold has a more depressant effect on its delicate tissue with the consequence that the bacterial invasion follows. Similarly, changes in diet may have the same effect such as suddenly turning hoggs on to turnips. This accounts for the fact that it is usually the best and most robust individuals that die from braxy. They are the heartiest feeders. In Australia a similar disease is associated with hot weather.

Usually cases are found dying or dead. It is a disease in which the obvious line of attack is by means of a vaccine. Professor Gaiger carried out the first accurate work on the disease and proved that V. septique is the cause. Following on this a vaccine has been prepared by this laboratory for some years and been used with great success. It is composed of the filtered toxin of the bacillus. Two subcutaneous inoculations are given at a week's interval. The vaccination causes no inconvenicnce beyond slight stiffness for a few hours. The vaccine has been used on a very large scale now for some years and has passed the experimental stage. It is now used universally in many of the worst braxy areas and the reports are uniformly good.

Gangrenous Mammitis.

This disease causes a great deal of loss in some parts of the country every year. The causal organism, a micrococcus, was demonstrated many years ago. Inoculation of the ewes before lambing with a

vaccine prepared from organisms isolated from previous cases of the disease is advisable as a preventive measure on farms which are badly affected. When once the disease is established a serum helps to save the life of the ewes and to expedite recovery, but in such cases it is usually only a question of salvaging the animal for the butcher on account of the irreparable damage which is done to the udder. These cases call for surgical procedure as it is important to remove the gangrenous tissue as quickly as possible.

Scrapie.

This is a most obscure disease. It is prevalent chiefly in the Eastern Border Counties, and outside this area is seldom heard of, although there is evidence that many years ago it existed in the East and South of England. It exists on the Continent of Europe. The disease is commonest in Half-Breds (Border Leicester Cheviot) and in Border Leicesters.

The symptoms are itching of the skin, with loss of wool, nervous derangement and progressive emaciation. The wool becomes lighter in colour. The skin remains perfectly clean except where it has been injured by rubbing. Excitement may cause the death of a scrapie sheep. An instance of this occurred in the case of one the writer had under observation. It was a vigorous Half-Bred (Border Leicester-Cheviot Ewe) and was by no means in an advanced stage of the disease. An assistant who was well accustomed to handling sheep caught it and set it on its buttocks for the writer to take a sample of blood from the jugular vein. It immediately died before anything else was done.

The great difficulty in investigating the disease has been the very long period of incubation. This is from 12 months to two years. Inoculation experiments have been unsuccessful, but there is a great deal of evidence to show that the disease is transmitted by copulation, and also that it can be inherited. Apparently diseased and healthy sheep can run together without any danger of contamination as long as copulation is excluded. A ram can develop the disease without ever serving a ewe, having been born with the disease latent in it. The same applies to the ewe. The ram can apparently transmit the disease from infected to healthy ewes.

The great difficulty in controlling the disease is the long period of incubation. By the time the results are apparent, a great deal of harm has been done.

There are a great many points of vital importance which cannot be explained at present. It is very difficult to explain why the disease

should show such comparative restriction to breed and to area of country affected.

Copper sulphate treatment for nematodes in the fourth stomach and extract of male fern for liver flukes are very successful, but there is still room for a great deal of research on these important parasitic diseases.

Caseous lymphadenitis, foot rot and various contagious inflammatory skin affections are diseases which give a lot of trouble, and for which farmers constantly ask for something in the way of specific treatment which is easier to carry out than the ordinary troublesome measures. The demand is reasonable, and it is to be hoped that later work may to some extent lead to its satisfaction.

NOTES WITH REFERENCE TO THE ETIOLOGY OF CANINE DISTEMPER & CANINE HYDROPHOBIA.

By C. C. TWORT, M.D.,
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Since the discovery of an infiltrative disease of the nervous system of rabbits, and the subsequent demonstration of a sporozoal protozoa as causal agent of the disease, considerable interest has centred round the nervous diseases of man and other animals, wherein the histological lesions are in the main similar to those found in the rabbit disease.

The encephalo-myelitis of rabbits was at first thought to be a virus disease; the small round-celled perivascular infiltration and other pathological changes, together with the sterility of cultures bearing superficially a striking resemblance to the findings in canine distemper and hydrophobia, etc., which have long been considered to be themselves due to the presence of a virus. Later it was shown that the disease of rabbits was not confined to the nervous system, and that the renal system suffered even more frequently, other organs such as the liver and spleen being also affected. The discovery that an encysted protozoal parasite, designated as a microsporidium, was present in the nervous and renal tissues naturally made workers turn their attention again to the group of nervous diseases so long classified as of virus origin.

Canine hydrophobia was one of the first to be investigated, the cell inclusion bodies known as Negri corpuscles being studied in detail for evidence of their relation to microsporidia. It has been

stated that a minute study of the Negri corpuscles reveals that they are possibly nothing more than the cysts of microsporidia. More recently workers have described bodies present in the nervous system of cases of canine distemper, the description of which bodies has led some readers to imply that the bodies they have found are really microsporidia. It has even been stated that similar bodies have been observed in the vesicular fluid obtained from cowpox.

The question to be answered is, how much reliance is to be placed upon these claims, and what attitude is one to take up as regards the nature of the chief etiological factor in these diseases. The writer has for years performed experimental work on the diseases under discussion, and therefore is in a position to judge the merits of the results claimed. My own experience has not been in line with that of other workers, and perhaps it will be well to discuss briefly exactly what they have been.

In the first place as far as the encephalo-myelitis and nephritis of rabbits is concerned, the demonstration of the microsporidia is usually, comparatively speaking, a very simple matter. Cysts of these parasites were seen in my original specimens, but circumstances were such that I was unable to investigate their nature, and they were previsionally considered to be unconnected with the disease, a virus being suggested as causal agent. It appears that there are workers who doubt whether the microsporidia are really definite parasites, and who suggest that they may be artifacts. It is true that all are not agreed upon the actual classification of the parasite, viz., whether a microsporidium or a haplosporidium, but that we are in the presence of a definite parasite there would appear to be no reasonable room for doubt. The differential staining qualities as shown by the utilisation of Mann's method and many other stains renders the parasite particularly easy to demonstrate.

As regards canine hydrophobia, my observations agree, more or less, with those of other workers, but I am less inclined than some to consider the details of structure seen in the Negri corpuscles as evidence of their relation to the microsporidium of rabbits. As far as I am aware no worker claims to have seen the typical microsporidial cyst, resolvable into its contained individual spores, in hydrophobia.

In vaccinia I have been unable to demonstrate bodies in any way resembling true microsporidia.

It is somewhat more difficult to draw conclusions from experiments on canine distemper. I myself have never been able to demonstrate microsporidia in the nervous system of dogs suffering from the nervous form of this disease. The reason for my negative results as against

the positive results of other workers may be due to the fact that there is more than one disease embodied in the condition we call nervous distemper. It may be mentioned, however, that some of my cases were pre-war and some post-war, so that they did not originate from a single epidemic. Bodies somewhat similar to the Negri corpuscles of hydrophobia are often very numerous in the nervous system of cases of canine distemper, and they are frequently very small, and may even be rod-shaped. The extra-cellular small-round and rod-shaped forms, if stained by Mann's method may be indistinguishable from microsporidia, but if a more powerful stain such as Giemsa or F. W. Twort's propyl alcohol solution of his stain is used the differential staining of the internal chromatin material of microsporidia makes them almost impossible to confuse with any cell inclusion body.

CONCLUSION.—From the writer's observations carried out on the diseases under discussion, microsporidia are only with certainty demonstrable in the rabbit disease. Canine distemper, canine hydrophobia and cowpox are still to be classified as virus diseases.

A NOTE ON NEOPLASMS SURGICALLY REMOVED AND EXAMINED HISTOLOGICALLY OVER A PERIOD OF TWELVE CONSECUTIVE MONTHS.

BY FRANK CHAMBERS, O.B.E., F.R.C.V.S.,
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DURING a period of twelve months ending December 31st, 1925, the neoplasms described below have been surgically removed from animals, and portions have been sent to the laboratory for examination and report.

The majority of the specimens have been reported on by Dr. Murray, of the Imperial Cancer Research Institute, and I desire here to record my grateful thanks for his kindness in doing this, as it must have added an extra burden to a very busy worker.

Several growths have been removed, but have not been sent for examination, either from stress of work or through having been thrown away during the cleaning up process after the operation. In only three cases has recurrence of the growth been observed. Two of these were sarcoma of the skin of the prepuce, and strangely enough both patients were Retrievers. The inguinal glands were removed at the same time as the growths, but within three months there was another growth in the original position even larger than the one previously removed. No doubt there must have been some cells

left behind, for I am of the opinion that if the excision is bold and thorough, recurrence is rare.

Excepting Adenomata in the mammary gland of the bitch, carcinoma of the anal gland and of the throat would appear to be the commoner sites for malignant growths. Quite recently I have destroyed no fewer than seven dogs with large growths in the region of the neck which were causing difficult respiration and deglutition. As in man, age is the determining factor, and most of the cases have been seen in dogs from 8 to 12 years of age. Sarcoma is occasionally seen in young dogs, whilst fibroma of the nictitating membrane is frequently seen in young dogs and cats.

CASE 1.—Fox Terrier, nine years old. The owner, a doctor, said that the dog had been "off colour" for a week. Temperature and pulse normal. On examining the dog I found that the right testicle was very much larger than the left. Suspecting a new growth I suggested removal, and this was done under a general anæsthetic. The wound healed without any trouble, but it did not improve the dog's condition, and he died five weeks later. No P.M. was made.

Pathological Report: Columnar celled carcinoma.

CASE 2.—Mongrel Terrier, six years old. Growth on the back over the region of the sacrum. This was breaking down and emitting an offensive odour. Removed under local anæsthetic. Treated the area daily with BIPP, and the wound healed very nicely. Up to date (January 16th, 1926) there has been no recurrence.

Pathological Report (examn. done by R.V.C., Edinburgh): Carcinoma.

CASE 3.—Homing Pigeon, two years old, with a growth on the back between the wings. It was as large as a walnut and was breaking down. Removed it under local anæsthetic and I had great difficulty in controlling the hæmorrhage afterwards. The case did well and when I saw the owner a few days ago he informed me that there has been no return.

Pathological Report (R.V.C., Edinburgh): Epithelioma.

CASE 4.—Retriever, seven years old. Growth as large as an orange affecting the skin over the lumbar region. Had been noticed first four months before. Removed under local anæsthetic.

Pathological Report (R.V.C., Edinburgh): Epithelioma.

CASE 5.—White West Highland, 10 years old. Growth as large as a walnut protruding from rectum in a process of breaking down. Growth had been observed for over 12 months. The dog was in a bad condition and has a very septic mouth and many bad teeth. Removed growth under local anæsthetic and extracted all the bad

teeth at the same time. The wound was a little troublesome to get to heal, but in five weeks the patient had regained the normal. No return of the growth to date.

Pathological Report: Alveolar Carcinoma.

CASE 6.—Yorkshire Terrier, 10 years old. In October, 1925, I removed a small growth on the abdominal wall on a level with the end of the penis, but I did not subject the specimen to histological examination. In January, 1925, the dog was brought back again with a growth in the groin as large as a duck egg. It was ulcerating and discharging. The growth was in all probability a secondary in the inguinal gland. Removed the growth under general anæsthetic, but a large wound resulted. The cavity was packed with gauze and the skin stitched over. The poor little fellow suffered a lot of pain afterwards and died on the seventh day following the operation. Sections were cut and examinated by Dr. Dyke, Pathologist at the Wolverhampton and Staffordshire General Hospital. His report reads as follows:—

"The tumour which you removed from groin of dog is not an epithelioma. It is composed of large cells of the 'foam' type and is much more closely allied to the sarcomata. Unfortunately I have put the whole of the material through paraffin and therefore am unable to ascertain, as is usually the case, if the vacuoles of the cytoplasm of the cells contain cholesterine esters. I expect that they did. These tumours are very rare in man, and as a rule are relatively non-malignant but may recur locally and even form metastasis. If you want to put a name to it I should call it an xanthosarcoma."

CASE 7.—Fox Terrier, three years old. Large neoplasm on nictitating membrane of left eye. Excised under local anæsthetic plus Adrenalin.

Pathological Report: Adenoma, not malignant.

CASE 8.—Cow, seven years old. Had a large growth on lower surface of vulva, probably originating from the clitoris. This case was seen in consultation with Mr. G. Barber, M.R.C.V.S., of Brewood. This growth was removed under local anæsthetic. The hæmorrhage was not very bad at the time, but Mr. Barber was called in again on the same evening to stop what was a serious secondary hæmorrhage. As the growth commenced to reappear at the end of three months the cow was sold to the butcher.

Dr. Murray reported that the tumour was a squamous cell carcinoma—perfectly typical.

CASE 9.—Mastiff, eight years old. This dog was inclined to be of a hæmophilic nature and was the subject of a note in the *Veterinary Record* two years ago. He was brought to me again in April, 1925,

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with a small ulcerating growth on the skin of the left testicle. With some diffidence, knowing this dog's capacity for bleeding, I removed the tumour, but the bleeding was not excessive at the time. The wound bled a little for three days. In May the dog was brought in again with a tumour of the skin over the left hip joint. It was ulcerating. The owner did not desire further treatment and the dog was accordingly destroyed.

Pathological Report: Epithelioma.

CASE 10.—Chestnut Gelding, seven years old. Showed a swelling on both sides of the neck midway between the base of the ear and point of the shoulder nine inches in diameter and protruded about four inches above the level of the neck. Being soft I opened it on both sides and liberated a large quantity of pus. Several large sinuses extended in a downward direction and on further examination I came to the conclusion that I had a botriomycotic growth to deal with. Two days later, after the usual precautions, I cast and anæsthetised the horse and removed the growth on the near side. The hæmorrhage was profuse. The mass of fibrous tissue weighed 4 lbs. The wound was packed with gauze. It was removed next day and the wound was irrigated for two hours daily with eusol solution. At the end of the second week the horse was again put down and the remaining mass of tumour on the off side removed. This portion weighed 3½ lbs. The case did very well.

CASE 11.—Pom, 12 years old. Growth on front of off fore leg over metacarpal bones. Removed under local anæsthetic, and skin drawn over denuded area. The growth was about the size of a golf ball. It healed up well.

Pathological Report: Melanotic Sarcoma. There has been no recurrence to date.

CASE 12.—Alsatian Wolf Hound, three years old. Had a growth as large as a walnut on the outside of left hock implicating the skin only. Removed under local anæsthetic. When cut across the tumour contained numerous chalky deposits.

Pathological Report: Caseating granuloma. Not a tumour, no giant cells or tubercle bacilli.

CASE 13.—Fox Terrier, 10 years old. Tumour in groin—soft, not painful. Injected cocaine and adrenalin around growth and removed same. It was obviously a lipoma. No hæmorrhage. The dog had a bad night. Next day the area around wound was very dark and painful. Animal is not eating and obviously very ill. Removed

stitches and irrigated with hot eusol. On the following day the dog was vomiting blood. Temperature normal. Complete loss of appetite. Gave hydrated bismuth and applied plasmul externally. Died the next day.

CASE 14.—Airedale dog, three years old. Had a lump on the forehead between the eyes. Slightly painful, and I suspected a blow as being the cause of the trouble. Six days later (April 6th) there was a discharge from the eyes and nose. Temperature, 104. It was not known if the dog had ever had distemper, so I gave him an injection of distemper vaccine and prescribed the usual remedies.

April 8th : Eating a little better, but still discharging from the eyes and nose. Lump is a little larger, but shows no signs of "pointing."

April 18th : Decided to cut down on swelling and see if there is any deep seated pus. The area was shaved and rendered aseptic. Local anæsthetic was injected. There was much granulation tissue, but no pus. Afterwards there was a constant discharge of pus from the wound and nose.

April 24th : I decided to make a further search and after the usual preparations the patient was chloroformed and an elliptical piece of skin removed from over the swelling. A large portion of new growth was removed right down to the frontal bones. I then found that there was a hole in the frontal bones $1\frac{1}{2}$ inches in diameter, and that the frontal air sinus was filled with new growth. It appeared to me that I had a cancer to deal with and I then proceeded to obtain the owner's consent for destruction.

Pathological Report : Typical Squamous-celled Carcinoma.

CASE 15.—Fox Terrier, 10 years old. Had a swelling on the right leg implicating the carpal joint. He had been going lame for some time and eventually became so bad that he could not put the foot to the ground. I had the leg X-rayed and the result (Fig. 2) shows the absorption of bone. The dog was destroyed and the leg sent to Dr. Murray. In his report he states : " the first tumour from the fore leg of the fox terrier turns out to be analveolar epithelial or endothelial growth and not a myeloid sarcoma as I expected from the X-ray expansion of the bone. I am not quite certain which I ought to call it, and if there had been any other primary site in some other part of the body I should be inclined to regard it as a carcinoma, but certain features of the cells suggest that the tumour may in reality be endothelial. In any case it is a very interesting tumour and I am much obliged for it."

Case 15.—Fig. 1.

Case 16.—Retriever dog, nine years old. Pedunculated growth over the left gluteal region about two inches in diameter and ulcerating on the surface. Removed under local anæsthetic. The wound which was left was rather a large one, and an attempt was made to draw it together with silk sutures after making an incision on each side through the skin about half an inch away from the wound. The popliteal gland on the same leg was much enlarged. The wound took a little time to heal, but there has been no recurrence of the growth. The report on the sections reads :—

" The tumour does not look at all malignant. It consists of masses of ordinary fibrous tissue with islets of sebaceous glands all through it. I don't known what to call it—sebaceous fibro-adenoma would be a fair description. I should expect the gland to be inflammatory and not a secondary growth."

Dr. Murray's diagnosis is fully borne out by the result of this case.

Case 17.—Ten-year-old Sheep Dog. The owner complained that the dog had great difficulty in swallowing, and when pressed over the region of the larynx evinced signs of pain. A growth was obviously present and this was removed under general anæsthetic. The growth was as large as a walnut. The external carotid was severed during the process of removal of the growth. The wound healed in about

Case 15.—Fig. 2.

two weeks, the ligature on the carotid coming away on the tenth day. The report on the growth was: "the specimen proves to be a lymph gland with very soft squamous-celled carcinoma. It is, therefore, a metastasis and there is nothing to indicate the thyroid as the primary site. Perhaps it might be worth while to have another examination of the buccal cavity. I have sometimes seen quite small growths between the pillars of the fauces in dogs. If there is anything further back, the prognosis is as you know, very bad." The dog developed a very troublesome cough for some weeks, but this eventually cleared up. He did not make any great progress, and at the owner's request I destroyed him five months later. I could not find any primary growth in the region of the fauces when making the post-mortem.

CASE 18.—Cow, six years old. Had two ulcerating growths over the zygomatic ridge and one over the lower jaw. They were removed with some difficulty as the submaxillary branch of the jugular ran on the internal border of the lower tumour.

Sections proved the growth to be carcinoma. The cow did very well and although she was pregnant at the time of the operation, she calved to full time.

CASE 19.—Fox Terrier, eight years old. Growth in the neck similar to Case 17 removed under general anæsthetic. External carotid and jugular severed. The wound healed very quickly and the dog soon regained his usual health and high spirits. However, some two months after the operation he commenced to have fits of the epileptic variety. As the fits continued to be more severe in number and effect I destroyed the dog some two months after the operation. It may be that the cause of the fits was a primary growth in the brain and would come under the heading, Jacksonian epilepsy.

XUM

CASE 20.—Yorkshire Terrier, 15 years old. Breaking down growth as large as a hen's egg on the skin of the flank. Removed under local anæsthetic. Dr. Murray's report: "The skin tumour proves to be a melamotic sarcoma probably fairly malignant as the development of pigment is very slight, and there are many mitosis in the sections." The dog was brought back two months later with a large recurrence at the same spot where the original growth was removed. He was destroyed to prevent further suffering.

Mammary tumours of the bitch are very common and are mostly of the adenoma type. The undermentioned three were taken out in one week. There was no recurrence.

CASE 21.—Mammary tumour, seven-year-old bitch. Pathological Report by Mr. J. H. Mason, M.R.C.V.S.: Adeno-chondroma. The cartilage was imperfectly formed.

CASE 22.—Bitch. Mammary tumour as large as a duck egg. Pathological Report by Mr. J. H. Mason: Fibro-adenoma. Many of the acini were dilated and showed papilliform projections. Others were contracted tortuous or elongated.

CASE 23.—Mammary Tumour. Eight-year-old Irish Terrier bitch. Pathological Report by Mr. J. H. Mason: This was rather indefinite. In some parts it resembled a fibro-adenoma, in others chronic mastitis was present and again in others carcinoma was very suspicious.

It would appear that the domestic animal is afflicted with practically every variety of malignant neoplasm. Although only 23 cases are recorded above, more than double that number have been dealt with in the period under review, but, as mentioned above, only the cases from which sections have been cut are recorded.

Clinical Articles

AMPUTATION OF THE HORSE'S TONGUE.

By C. WENTWORTH ELAM, M.R.C.V.S., D.V.H.,
Liverpool.

MOST practitioners are aware that cases of paralysis of the tongue are not uncommonly met with; moreover, the majority of them present puzzling features, as to their causation. The following case is, perhaps, of interest for this reason: it proves that in some cases the horse suffers little ill-effect if the whole of the free portion of the tongue is amputated.

Two years ago, a client brought an aged Roan Mare to the Infirmary and gave me this history: "The mare was pulling a heavy load

when she started to cough violently, and her tongue fell out." I examined the mare and found the tongue protruding to its fullest extent, and she was totally unable to eat or drink. I could not find any signs of injury. Since the paralysis was bilateral, the condition probably arose secondary to hæmorrhage in the medulla at the seat of origin of the nerves supplying the tongue. I adopted the treatment which appears to be general, in these cases, but in spite of putting the tongue in a sling, making incisions into the tongue, and feeding the mare by means of the stomach tube, she gradually became worse. Seven days later the tongue appeared greatly swollen, and was becoming necrotic, so I advised the owner to have the animal destroyed. Next day he informed me he was very dissatisfied with the offer made by a Continental horse-slaughtering company for the animal, and so persuaded me to give further treatment. Amputation of the whole of the diseased part of the tongue was the only treatment that could be adopted. According to the writings of many surgeons the operation would not prove a complete success. Before deciding on amputation I asked myself the following questions: Is the tongue an organ of vital importance to the horse? Would deglutition be impaired to such an extent after the operation, that it would interfere with the animal's usefulness? To try and obtain a practical answer to these questions, I carried out this simple experiment: Holding my tongue extended between my teeth I tried to swallow and found it practically impossible at first; with a little practice I was able to carry out the act of deglutition with difficulty. I therefore did not see any reason why the mare should not be able to do likewise. Under general anæsthesia, on the operating table, I removed the whole of the free portion of the tongue, controlling hæmorrhage by means of the actual cautery. Later in the day I offered the mare food and water, but still found her unable to eat or drink. The second day after the operation I fastened the mare up to a graduated drinking trough and found she had drank one bucketful of water in three hours. During the remainder of that day she consumed one small bucketful of mash composed of bran, oats, linseed and treacle. After persevering in this manner for two weeks, the mare was able to eat and drink practically without difficulty, and one week later she was passed out to work. Since the operation, two years ago, this animal has been carrying out her arduous duties at the Liverpool Docks without any ill-effects and receiving the same diet as the other horses in the stock. It would appear from the above case that amputation is the only treatment to adopt, should the case fail to show any improvement after a few days' usual treatment.

A CASE OF LAMENESS.

By H. C. ROCKETT, M.R.C.V.S.,
Salisbury.

I was asked to examine a 12-year old hunter that had been in the owner's hands for seven years.

The history of the case was as follows. He had never been lame, except for a short time a couple of years ago, the cause then being put down as " splint," for which he was blistered.

About a fortnight before I saw him he was hunting, and jumped rather big, into the road and over-reached, though not badly, and the fact that he went a little lame after the jump was put down to the over-reach on the near foreheel. He was rested a day or two and the heel treated, then hunted again and went well until there was a check, after which he moved off lame, but not very badly so, and a day or two later he was sent to the meet, but on the way fell dead lame. The groom started to bring him home, when he almost at once went sound, so once more he was turned towards the meet, only to go lame again.

A few days later he was trotted out and went sound, so was hunted again, carrying a very light weight. He again went sound till there was a check, and again fell lame then, and very much so, so he was led home, so lame that one or two people remarked that he had a broken leg ; he would just touch the ground with his toe, but would not put the heel down at all.

I saw him about three days after this for the first time and was told he had been lame on the near fore (where the over-reach was), but he trotted out quite sound then.

I gave him about five minutes' sharp canter, then had him rested for about five minutes only. He cantered freely, came in sound, but after the five minutes pulled out dead lame on the off fore (so I expect he was lame there before and his owner had forgotten), and oddly enough, after that canter he remained very lame and would only hobble round the box, until he gradually improved and went sound in about six weeks.

I could find no definite cause for the lameness, but was very suspicious of the foot, which was tender to pressure. I thinned down the sole and steeped well for a couple of days and still found nothing definite, though I now pared right down. Under the outer quarter the sole was discoloured (yellow) and soft, but there was no sign of pus, though I went right through carefully.

Failing anything better to do, I put a fairly sharp blister round the coronet and awaited events, and the case then went steadily on. The horse is now going quite sound, I am informed (he is turned out in Ireland), but he will not be used again this season. My diagnosis was

severe bruising of the sensitive structures of the foot, or possibly a fractured pedal bone, but how far I was correct I cannot say. Perhaps I should have been able to diagnose quite easily, but I could not.

I may say that this horse, a brilliant performer, and one for which a very big price has been offered, has the worst looking coronets I have seen.

One would at once say " side bones," but I am of the same opinion as the Veterinary Surgeon who examined him when he was bought seven years ago. He has very enlarged lateral cartilages, but they are not ossified, and I feel sure that they had nothing to do with his lameness.

A CASE OF NASAL POLYPUS.

By HUGH JAGGER, O.B.E., M.R.C.V.S.,
Buckingham.

Roan gelding aged 11 years.

Reported as having been rather noisy in breathing for a month, when a growth was noticed in the left nostril, which could be seen, and handled by inserting the finger and thumb, and pressing upwards the wing of the nostril.

When I was called in on January 2nd, the nostril was almost entirely occluded and I decided to operate.

On the 4th the animal was thrown and a local anæsthetic injected into the neck of the tumour. A ligature was manipulated as high up the base as possible and tied. With the aid of an assistant holding the growth gently with a pair of long forceps, I was preparing to excise it, when the horse gave a very slight movement of the head and the specimen came quite easily away.

After the animal was allowed to rise the hæmorrhage was not very serious—but 2 hours afterwards a quantity of clear fluid, of the nature of saliva, estimated as being quite a quart, trickled and dropped for upwards of an hour. The patient remained the night in hospital and walked 5 miles home the next morning. When seen again on the 7th, it appeared quite recovered and breathed naturally.

AN INTERESTING CYSTOTOMY.

By RALPH BENNETT, F.R.C.V.S.,
Romford.

The following case is recorded, chiefly with the view of illustrating the value of persevering sometimes in what looks an apparently hopeless case.

An Irish terrier bitch, aged 3 years, when first seen by me was obviously in almost last stage of exhaustion from cystic calculus. An immediate operation was advised as the only possible means of saving life.

Urine, deeply blood-stained, was drawn off by catheter.

Anæsthetic.—Equal parts of Chloroform and Ether. The Quantity used was 5 drms.

On making an incision, after usual preparation, on the linea alba just in front of pubis, a quantity of blood-stained liquid escaped from peritoneal cavity, and when bladder was raised, it was found to be very much thickened and of a dark-bluish, almost black, colour.

At this stage I almost decided to destroy the animal as it looked quite a hopeless case ; but after all, decided to proceed.

The bladder was incised along the median line and seven large calculi (each rather larger than the butt end of a fountain pen, and with a rough surface), together with a quantity of " gravel," were extracted.

The bladder was flushed out and the wound closed with fine " Lembert's " silk sutures.

Peritoneum, muscles, and skin, were then sutured in ordinary way.

To my surprise the patient made a rapid and uneventful recovery. The temperature never rose above 102·5° F., and she was lively and ready for food on the following day. Urine was passed easily and naturally. After treatment consisted in giving Hexamin gr. 5 and Acid. Sodium Phos. gr. 5 twice daily.

She was discharged quite fit in 10 days.

AN UNUSUAL PROLAPSE OF THE BOWEL.

By RALPH BENNETT, F.R.C.V.S.,
Romford.

THE case was one which had been admitted to hospital for ovaro-hysterectomy, the patient being a mongrel bitch, aged 6 months. Contrary to my usual practice, I sutured the peritoneum with sterile catgut instead of silk. The bitch made a good recovery, except that she tore out the skin sutures and so delayed healing.

As everything appeared well, and the wound had nearly closed, she was sent home on May 14th. As my kennelman was taking her towards home, he noticed that she suddenly lay down, and on picking her up he found a piece of bowel protruding from the wound. He returned at once, taking care to carry her on her back with the abdomen upwards.

On arrival here practically all the small intestine was protruding. The bitch was placed on her back on the operating table, the protruding bowel being protected by gauze soaked in eusol, and at once chloro-

formed. The bowel was thoroughly cleansed and returned; and ℥j Liquid Paraffin (sterile) put into abdominal cavity. The wound was then closed with four deep and three outer sutures, *all* silk.

On the following day (May 15th) she was fairly lively; temperature 102° F., but very thirsty, and had occasional attacks of sickness. She was given ℥j Liq. Paraffin c Tr Opii Co mv. per orem, and a glycerine enema. Later was given several doses of Mist. Bismuth Co. On May 16th patient was bright; sickness had ceased and she took milk freely. Temperature, 102·5° F. From this time progress was uneventful, and the bitch was discharged, quite recovered, on May 22nd.

HERMAPHRODITISM IN A DOG.

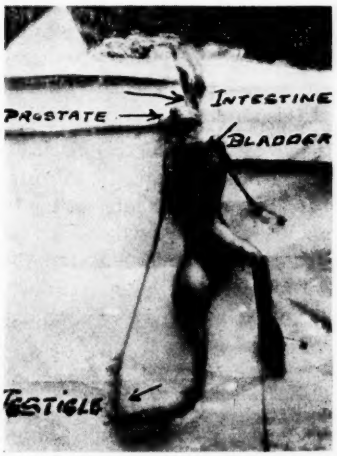
By LOUIS SEWELL, M.R.C.V.S.,
London.

SUBJECT.—An Alsatian wolfhound, aged approximately five years. General condition fair, temperament kindly with people, very slightly aggressive to other dogs of either sex. It had always had a large double scrotal hernia, which caused no inconvenience, as long as owner could remember.

HISTORY.—This dog was first brought to me because it was passing loose motions which contained blood and mucous, and I was asked to see if I could cure the dog of the unpleasant habit of dripping urine wherever he walked or sat. The animal had no temperature when taken into the nursing home. Treatment of the intestinal symptoms, which resembled colitus, were undertaken at once, and were most obstinate to all the usual intestinal astringents and antiseptics, but although they did not get much better they certainly did not get any worse. After the dog had been in a fortnight it ran a temperature of 101 for several days—this came down to about 102 and varied between this and 102½. The foregoing may all be beside the point with regard to the following, but personally I don't think so. When the dog had been in several days the penis was exposed for examination with reference to the incontinence of urine. Immediately it was seen that the extremity was being pulled back by a band of fibrous tissue which was attached to the base of the penis, so that the penis, instead of pointing forward, was pointing back. The urine that came away was mixed with a mucopurulent material. I thought that the fibrous band was probably responsible for the trouble, and so, consequently, removed it, with the result that for a week or ten days the dog passed its water fairly normally. However, from the time that I removed the band from the penis the dog rapidly lost condition, a fact which

I did not connect with the urinary apparatus as at that time the bowels had got rather bad again. As I was at a loss to account for it, I thought that perhaps there might be some internal trouble which an exploratory laparotomy might reveal as the abdomen had always been somewhat distended. I obtained permission from the owners to operate with instructions to destroy the dog if I found that no permanent cure could be effected.

I found what is shown in the accompanying photo, namely, a well-developed organ which appeared to me to be a uterus. The body being about nine inches long and the two horns about 12 inches each. These led to the scrotum and were attached one to each testicle, and formed part of the scrotal hernia. The body of the uterus appeared



Hermaphrodite organs from the five years old Alsatian.

to be all in one of the bowel walls, but there was no internal connection. The prostate gland and bladder were attached to the body. This uterus contained about one quart of liquid which appeared to be very thin pus, which was in no way offensive in odour. Unfortunately somebody evacuated this before the specimen was sent to Dr. Crew, of Edinburgh, for examination. Both bladder and prostate gland contained this material.

The two points which baffle me in this case are—

(1) Why should the bowel symptoms be present ?

(2) Why should the dog so rapidly lose condition after the fibrous band on the penis was cut ?

The specimens were sent to Dr. Crew, M.B., B.Sc., of the Animal Research Department, University of Edinburgh, who very kindly reported upon them as follows :—

The internal genitalia consisted of :

(*a*) A well-developed uterus that manifestly had been distended by fluid. The uterine wall was thickened, the mucosa degenerate, inflamed, and in many parts desquamated. On section, there were indications of considerable overgrowth of fibrous tissue. The distended uterine horns, only slightly flexuous, ended blindly near the epididymis and ran in the upper border of the broad ligament. The utero-vaginal mass terminated blindly at its attachment to the urethra.

(*b*) Vasa deferentia communicated distally with well developed epididymes and pursuing their course in the broad ligament parallel to the uterine horns, and became intimately attached to the body of the uterus and to the vaginal wall, thereafter opening into the urethra near the junction of this structure and the utero-vaginal mass.

(*c*) Testes (only one available for histological examination) with the structure of normal functional testes. Prostate seminal vesicles of normal structure. The case is of interest for the reason that this male possessed a well developed uterus and was somewhat imperfect in its external organs of reproduction. It is to be interpreted as an instance of intersexuality due to the fact that the testes came into action during fœtal life later than is usual with the result that the Müllerian duct derivatives were not inhibited in their development at the proper time.

The fact that the uterus contained fluid is noteworthy. The utero-vaginal mass was a closed sac lined earlier in part with typical uterine mucosa. The fluid is to be regarded as the product of the cells of the mucosa. It is strange that in the presence of testicular tissue and in the entire absence of ovarian, the uterine mucosa can function in a way that simulates the œstrous cycle. The condition is hereditary.

I regard this abnormality as the incomplete transformation of a phallus into a penis, and the grade of abnormality shown by these dogs of yours is really quite common among the intersexual goats. I do not think that the operation had anything to do with the dog's increasing ill-health. I am strongly of this opinion. It seems far more likely that the retained fluid in the closed uterus had become infected—but against this there is the fact that there were no signs of infection clinically.

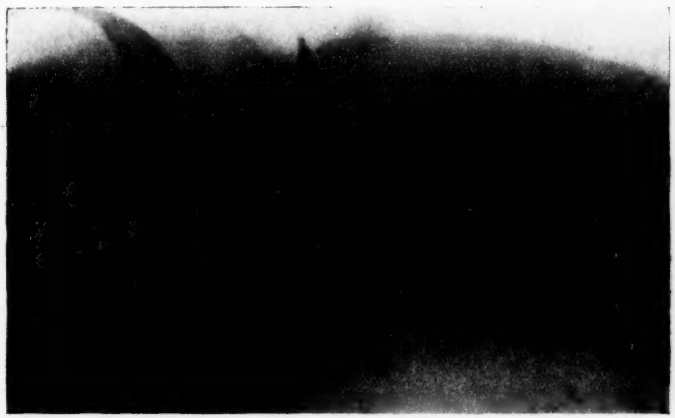
It will be profoundly interesting later to conform your findings in the case of the other case you mention. I suspect that some sort of rudimentary uterus is present.

I hope that you will keep full records of this family. It is, as you know, of the greatest importance that we should get as many clear-cut cases of straightforward inheritance of undescended testicles, intersexuality and the like, as we can, and your terrier family seems promising.

DISLOCATION OF THE ATLANTO-AXIAL ARTICULATION IN A DOG. RECOVERY.

By E. MIDDLETON PERRY, C.B.E., F.R.C.V.S.,
Wimbledon, S.W.19.

I ENCLOSE a radiograph of a case of a dislocation of the atlanto-axial joint of a dog. This animal had been coursing and came into collision with a tree, when something was seen to be wrong with his neck, and he was brought to me for examination. On manipulation



dislocation was diagnosed, but I really could not believe that such a dislocation as I considered present could be possible without death of the dog. However, a screen examination decided the point, and being of some considerable interest a radiograph was taken, a print of which I enclose. Sanction was obtained from the owner to try and reduce the dislocation, but a very guarded prognosis was given as a slight movement in the wrong direction would quickly end the

matter. After an injection of morphia, chloroform was administered and the replacement carried out quite satisfactorily, although considerable difficulty was experienced and very great force had to be used.

A further screen examination was made and everything was found in order, the neck was then put into splints and kept bandaged for 48 hours, after which the splints were removed and a light bandage kept round the neck. In four days from the time of the accident the dog left completely cured.

I think the advantages of X-rays can be particularly appreciated in this case as one can observe the exact injury with which one has to deal, a very different proposition to working in the dark; and I feel sure if one would only try the effect of a screen or radiograph the use of this apparatus would be much more frequently sought.

ABSCESS OF THROAT CAUSED BY A NEEDLE.

By EDWARD L. BUTTERS, M.R.C.V.S.,
Liverpool.

THE patient was a Pekingese dog (two years old) suffering from an abscess on the upper part of the left side of the throat. About

a week after opening the abscess, as the wound did not appear to be in a healthy condition, I decided to have the part X-rayed.

The result was as shown in the skiagraph.

This was in the afternoon.

I chloroformed and operated upon the animal the next morning, but to my dismay could find no trace of the needle. The dog was X-rayed again on the afternoon of the same day, when to my surprise (and gratification) there was no needle to be seen.

The clinical history is interesting as showing that the needle must have worked out between the times of the X-raying and my operation.

REMOVAL OF THE ENTIRE SPLEEN IN A DOG.

By FREDERICK W. COUSENS, M.R.C.V.S.,
London, S.W.1.

THE patient was a French Bull bitch, aged nine years, on which I had previously operated for mammary fibroid tumour about nine months previously, and which had made a good recovery. When examined on November 14th, I found her with an enormously distended abdomen, her weight being 16¼ pounds. The muscles of head, neck and shoulder showed excessive atrophy, and the patient was showing great lassitude. She had, however, a good appetite, and the temperature was normal. The pulse was rapid, and the dog was showing a certain amount of distress on movement and discomfort even when at rest. The history was that she had only shown these symptoms for a week or two, the owner suspecting puppies.

I diagnosed an abdominal growth and operated for this on November 21st. I found a growth implicating the spleen, which organ had to be extirpated with it—the whole weighing 4¼ pounds. The bitch made a rapid recovery, taking food voluntarily after the second day, and the wound healed by first intention. Some 30 buried and about the same number of skin sutures were used, with 20 ligatures internally. There was only one large artery for supply.

Having found in a previous case which was reported in THE VETERINARY JOURNAL (a small Irish Terrier dog, with a growth weighing 7½ pounds), that Hæmatogen was extraordinarily useful, I gave it in this case with equally good results. There was no rise in temperature after the operation, but for three or four days it was about 100° F.

The animal made an excellent recovery and has put on flesh, being as bright and lively as ever.

She was discharged from the nursing home at end of second week.

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TAILLESS OLD-ENGLISH SHEEP DOG PUPS.

By E. L. BUTTERS, M.R.C.V.S.,
Liverpool.

I HAVE docked very many litters of Old-English sheep dog puppies, but until recently I had never come across a pup of this breed born without any sign whatever of a tail—although I have sometimes seen them born with stumps, which have had to be removed.

About six months ago I operated upon a "bobtail" bitch (two years old), which had been imperfectly docked in its infancy. The animal was chloroformed, I removed the stump and the wound healed perfectly, the bitch in consequence being much improved in value and appearance.

About a month ago she had a litter of nine puppies, and I was surprised to find that two of them were born without any vestige of tail bones.

I wonder if the operation had any bearing on this fact?

I should be glad to hear if other practitioners have met with cases where pups of this breed have been born absolutely tailless and without even stumps.

A HAIR-BALL IN A DOG'S STOMACH.

By J. L. PERRY, M.R.C.V.S.,
Cardiff.

HAIR-BALLS are, as is well known, quite common in the calf, and accumulations of hair frequently give rise to trouble in the stomach of the Persian cat. In the dog, however, such cases are uncommon, and the undermentioned is on that account worth putting on record.

A small Pomeranian bitch was admitted to my hospital suffering from eczema, and it was persistently biting at itself, so that the skin was quite raw in patches. I applied the usual remedies and to my astonishment one morning found her in a state of collapse, with all her previous night's supper vomited back again. She never rallied, and death took place the same night. *Post mortem* examination revealed the stomach to be absolutely filled with a mass of hair (her own), which had worked itself into a compact ball—which could neither come up or go down.

PROGRESS OF A NEEDLE SWALLOWED BY A SCOTTISH TERRIER.

By V. E. PULLIN and L. HUNT SARSFIELD,
Government Radiographic Research Dept., Woolwich.

The patient, a Scottish Terrier bitch, six months' old, was, as is usual with puppies, in the habit of continually swallowing all kinds of foreign bodies. On December 7th a needle threaded with white cotton was accidentally dropped on the floor, and the little dog immediately picked it up and swallowed it. This was about 8 o'clock p.m. During the night there was a little vomiting, but on the following day she ate her usual meals, although she seemed a little out of sorts and quieter than usual. On the 9th a radiograph was taken, and by this it was seen that the needle had passed the stomach, and had entered the duodenum. By veterinary advice a dietary of suet pudding was given, and on the following morning, December 9th, about 8.25 a.m., after an action of the bowels, the ends of the cotton were seen hanging under the tail. Gentle traction was applied, and the needle and cotton successfully removed intact.

JAUNDICE IN A WILD FOX DUE TO LEPTOSPIRA ICTERO-HAEMORRAGAIAE.

By GEORGE W. DUNKIN, M.R.C.V.S., D.V.H.,
National Institute for Medical Research, Farm Laboratories, Mill Hill, N.W.7.

The author is not aware that leptospiral jaundice has previously been reported as occurring in a fox and it is therefore considered desirable to place this case on record.

Foxes are known to exist within two miles of these laboratories, and by reason of our work in canine distemper special precautions have been taken to prevent incursions by these marauders. In addition many unsuccessful attempts have been made to capture foxes, for, as far as is known, no pack of hounds hunts in the immediate district; and in addition to the possible menace from the point of view of distemper their incursions have been the cause of much loss in chickens.

One of the staff employed at these laboratories was walking across the fields one morning, when he noticed what he at first thought was a dog. On approaching nearer to the animal he saw it was a young fox. He chased it and eventually felled it with a stick and then brought it to the laboratory.

A cursory examination of the carcase showed that the fox was suffering from jaundice.

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A *post mortem* examination was made and the following conditions observed.

Pronounced jaundice of the mucous membranes of the mouth and conjunctiva, also the skin of the abdomen and thighs. On opening the abdomen the peritoneum and omentum were markedly jaundiced. The liver was mottled, showing irregular pale areas alternating with darker patches showing severe congestion. The gall bladder was full, but normal in appearance, and the bile ducts did not appear abnormal. The kidneys were jaundiced and showed hæmorrhages also. The lungs showed very numerous small areas of hæmorrhages scattered irregularly all over every lobe. The belief that the case was one of leptospiral jaundice was not supported by successful results in examination of material from the liver, lung and kidney by dark ground illumination. The *post mortem* appearances were, however, strongly suggestive of this condition and failure to demonstrate the organism under the microscope did not exclude it from one's mind as a possible cause. The difficulty of demonstrating these organisms by this means is well known, particularly in man.

A small piece of liver and kidney was taken and finely ground up with sand and normal saline, and the resultant mixture was injected into guinea pigs. Two being used for liver "mush" and one for kidney. A quantity of this material was also inoculated into culture tubes, and these were examined from time to time.

All three guinea pigs developed jaundice in five days and were destroyed. Post mortem examination showed in each case the usual signs met with in this condition, including mottling of the lungs and liver and advanced jaundice of all membranes. Leptospira were demonstrated from all these cases by dark ground illumination. From one of these guinea pigs a sample of liver was taken, ground up in the usual way and injected into a second. This passage was continued until leptospira had been definitely seen by dark ground in the culture media.

Attempts to cultivate leptospira from fox material failed owing to the fact that all tubes became contaminated, but positive growths were obtained from all guinea pigs of the first series.

Sections of fox lung, liver and kidney were obtained and treated by a silver method (improved Levaditti-Dobell), and in the case of the lungs and liver leptospira were found in abundance.

The media used for cultivation was a solution of Agar in normal saline in the proportion of 1 to 10 and to this was added six or seven drops of fresh rabbit blood. After inoculation the tubes were capped and placed in the space under the incubator where the temperature varied from 20 to 25 C.

The average length of time which elapsed before leptospira could be demonstrated by dark ground illumination was one month.

Typical leptospiral jaundice has been produced in a guinea pig from subcultures and the organism has been obtained and demonstrated in material obtained from that animal.

The natural occurrence of leptospiral jaundice in the wild fox suggests that this animal must be added to the list compiled by O'Kell, Dalling and Pugh as a possible cause of this condition in fox hounds and other sporting dogs.

My thanks are due to Dr. P. P. Laidlaw for much help and many valuable suggestions.

" PULPY " KIDNEYS IN SHEEP.

By W. WATERS, M.R.C.V.S.,
Halstead.

THIS condition in sheep has, I believe, been investigated at the School of Animal Pathology, Cambridge, where it is stated to be due to overfeeding on artificial food, which I believe to be correct, as I have had cases in young lambs where the mortality ceased almost at once, when the concentrated rations were cut down. On the other hand, during the last six months I have had deaths in three flocks where sheep were receiving no concentrated food, other than grass, hay and roots. The last outbreak was similar to the others, so will content myself in briefly describing that only.

On December 5th, 1925, a client reported to me that he had just lost one ewe hogget and that several more appeared to be ill. He stated that the day before they appeared to be well, except that one or two had a tendency to scour.

I arranged to make a *post mortem* next day, by which time three more sheep were dead, and within 48 hours of first death eight died out of a flock of 50. The first three I opened revealed nothing except slight enteritis and a " pulpy " condition of kidneys, the latter being so soft that once the capsule was opened one found that the kidney was practically non-existent. The fourth sheep showed signs of being afflicted with parasitic gastritis, whilst kidneys were congested but not so bad as the others. In the other two outbreaks I mentioned previously, I also found some sheep with parasitic gastritis and others with pulpy kidneys, so it would appear that there is some connection between the two conditions. It is useless to send these kidneys away for pathological examination, as they are always putrid before being sent, consequently it would be of interest to hear if other practitioners are coming across the same conditions, and whether they find it is associated with parasitic gastritis.

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FOREIGN BODY IN THE MOUTH OF A SHEEP.

By J. S. PERRY, F.R.C.V.S.,
Cardiff.

THIS case occurred in a sheep. I did not see the animal alive but the head was sent to me from a local slaughterhouse on account of its strange condition.

The broken neck of a ginger beer bottle (glass) was the foreign body, and the tongue had entered the smooth (cork) end and had got fixed there.

One can only imagine how it got there and a debatable point is whether the neck was broken off prior to the tongue entering or whether the bottle was entire, and that the efforts of the animal to get rid of it broke it. One can imagine that in an unbroken bottle there would be a certain amount of suction if the tongue had entered any distance.

Abstracts

CONCERNING SEPTIC GANGRENE OF LAMBS.

By RAYMOND MOUSSU*
Of the Alfort School,
AND
JEAN PIERROT,
Veterinary Surgeon at Ecouen (Seine et Oise).

IN 1886 and 1887 Nocard showed that gangrenous mammitis of ewes was caused by a small micrococcus and that the malady could be reproduced by introducing a few drops of milk or culture from an affected udder into the galactophorous sinus of a healthy ewe. On the contrary, N. showed that bandaging the teat with a virulent culture did not provoke the malady and admitted that in the greater part of cases the infection occurs by direct penetration of the specific micrococcus into the gland by the canal of the teat.

Probably this is the way in which the greater part of cases of mammitis occur, but the penetration of the specific agent into the subcutaneous conjunctive tissue may equally produce local gangrene, which hardly differs from that of specific mammitis, except by its situation. At any rate, this is what we found in our investigations.

At a place called Brie all the lambs of the year, amounting to 144, were put at pasture with the mothers on July 10th, 1924. Up to then all had enjoyed perfect health. The flock fed in the day on fields of sainfoin, on dry ground perfectly suitable for sheep rearing, in the

* *Recueil de Méd. Vét.*, No. 11, June 15th, 1925.

evening it was parked for the night in the highest part of the pasture, sheltered from the west winds. The flock was in charge of a conscientious old shepherd with two dogs, one of which was young and keen.

On July 13th five lame lambs are brought up to the sheep fold, three days later six fresh cases of acute lameness occur, and on July 18th 16 lambs are affected and six dead. At this time all the lambs are folded and we are called in to examine them.

The isolated sick lambs showed in certain places a collection of symptoms pretty well identical in every case ; they remained down, quite prostrate, little appetite, suppressed rumination, quickened breathing, pulse rapid and weak, temperature raised in all cases 102.2-103-104. The majority are lame and made to get up, walk on three legs—a front or hind limb held in extension and dragged along.

Examination of an affected limb shows a more or less circumscribed region sometimes painful, but more often painless. At this site the skin is reddish violet and infiltrated with serosity. The limit of the swelling is marked in some cases by a greenish-yellow stripe which indicates the site of a future sloughing furrow. The temperature at the place is sometimes normal, but more often subnormal and there is no crepitation nor gaseous infiltration.

In all the patients one finds at various points of the swelling, or in its neighbourhood, one or two wounds of irregular aspect, round the limbs and in apposition down them, giving at once the impression of punctures from the bite of a dog or simple superficial chafes only involving the skin and almost healed up.

Individual examination of all the flock enabled us to find analogous lesions on sixty lambs and one adult sheep—they are situated in order of frequency on the posterior limbs (interior part of the leg), on the anterior limbs (region of the elbow), and on the lateral surfaces of the abdominal wall. When the wounds are deep a reddish serosity flows from them and in a few cases small fibrinous clots in suspension.

The course of the malady is variable. Out of 59 sick subjects 16 died within four, five, six and eight days after appearance of first symptoms. In every case the œdematous swelling takes on a progressive character without tendency to localisation ; at the same time the general symptoms are very much accentuated, lying on the side, rapid breathing, pulse small and thready, grinding of the teeth. When cure occurs the swelling remains limited and at the end of two to four days a greenish-yellow streak appears at the periphery, which fixes the limit of the invaded tissues. At the level of the lesion the skin becomes cold and sloughs slowly off, leaving a more or less

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large wound which heals by granulation. The boundary of the slough is indicated by the appearance of thick pus at the peripheric stripe. The establishment of suppuration is a favourable sign which shows that local and general defence are active and cure hopeful.

AUTOPSY.—At the autopsy one finds the local lesion and signs of septicæmia. Locally the skin, the subcutaneous and interstitial conjunctive tissue are invaded by an abundant bloody serosity which flows drop by drop from a cutaneous incision. This very fluid liquid does not give off any particular odour. The muscles of the part are infiltrated, œdematous and blackish. There is no crepitation or gaseous infiltration. The septicæmic lesions are indicated by vascular branchings on the serosa; peritoneum, pericardium, endocardium and by well marked congestion of the liver, more discrete on the spleen.

ETIOLOGY AND PATHOGENY.—These multiple injuries with their well marked characters, always identical, could only be due to a specific infection. At first we considered we were dealing with the affection recently described in Germany under the name of anthrax of wounds, shearing anthrax and considered by the majority of authors as identical with symptomatic anthrax of cattle. However, the absence of crepitation and gaseous infiltration raised a doubt which could only be set at rest by experimentation.

Cultures obtained from the serosity collected aseptically from a living animal gave us a micrococcus in a state of purity identical with that described by Nocard. The characters of the cultures on different media (bouillon, gelatine, potato, milk) the results of inoculations of the guinea pig (negative) and the rabbit (acute tumefaction with subsequent necrosis) allowed us to identify the micrococcus we obtained with that of gangrenous mammitis. We did not practice inoculation of the sheep, but the phenomena we observed correspond with veritable spontaneous inoculations. There was therefore an accidental difference not noticed heretofore, of a micrococcic infection grafted on to more or less severe wounds produced by the bites of a dog. It is curious to remark that the gangrenous mammitis that one meets with from time to time in its classic form in the flocks of the district has not been observed in the fold affected, it is true that the period of lactation had ended when the cases occurred. Another observation which is not without interest is that all the sick subjects save one are lambs, the only ewe affected has a deep bite in the udder and she died showing identical lesions to those of classic gangrenous mammitis.

From these facts it, therefore, seems to us proper to conclude that the micrococcus of gangrenous mammitis of sheep may, after penetration of the subcutaneous conjunctive tissue, provoke at the

site of a pre-existing wound septic œdemas and phenomena comparable to those which determine its penetration into the udder, by the galactophorous sinus; from the facts we report young lambs appear much more sensible to this mode of infection than adults.

TREATMENT.—On our first subjects we contented ourselves by practising incisions and scarifications locally to allow the liquid of the œdemas to escape. In some cases we made more or less deep incisions with the cautery, followed by disinfection with hypochlorite of soda and peroxide of hydrogen. This local action has been completed by general tonic treatment injection of physiological serum, administration of black coffee alcoholised. These means are reasonable, but are often insufficient.

This led us to try a specific medication with the help of microbian extracts used as subcutaneous injections with results that appeared to us markedly superior to those obtained previously. We made an injection each day for four, five and six days according to the run of the case. Very often after the second injection the œdema ceased to extend, and the suppuration rapidly established defined the slough which was eliminated without complications. In some cases even where treatment has been quickly applied and to the exclusion of any other procedure we have seen limitation and complete fading away of the œdema without local mortification. It seems to us that this is the best treatment and we believe that it could be instituted with success in the classic form of gangrenous mammitis.

A RARE CASE OF POLYDACTYLIA IN A CALF. DEVELOPMENT OF THE INTERNAL DIGIT*.

By MARCEL PETIT,
Of the Alfort School.

FOR a long time veterinary teratologists have noted, described and classified numerous cases of polydactia met with in domestic animals.

Lesbre and Blanc have even given very complete reviews and the classifications which they suggest are comprehensive enough to absorb all new cases observed. The case under consideration was furnished by M. Chrétien, of the Paris Sanitary Service.

It is the left hind extremity of a calf, the internal surface of which carries a complete supplementary digit that is to say, carrying a metatarsal bone and three phalanges, all fully developed. The corresponding claw comprises a complete horny box with a keratogenous membrane, with a perforating branch for the third phalanx,

* *Recueil de Méd. Vét.*, July 15th, 1925.

from the suspensory of the fetlock for the sesamoids, an extensor tendon of the phalanges.

Besides this supplementary digit other elements of the region may be found in all points like those of a normal foot. And it is precisely this which furnishes the curiosity of this case.

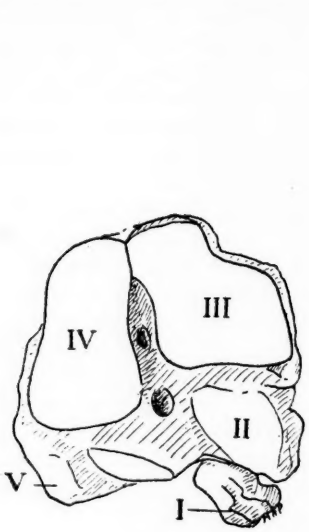

FIG. 1.

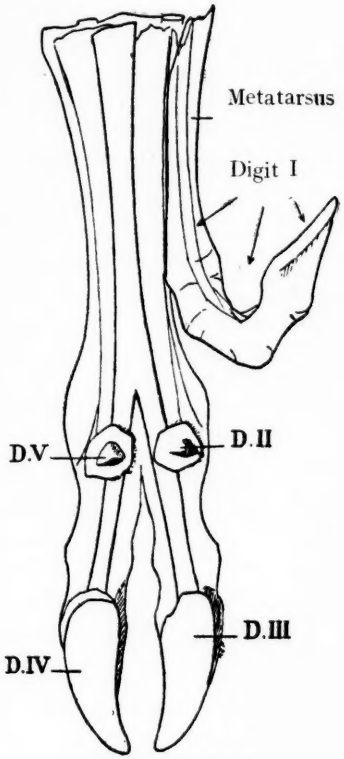

FIG. 2.

FIG. 1.—Upper View of the Extremity of the Left Metatarsus of Ox, showing its Constitution according to Lavocat.
FIG. 2.—Posterior Surface of Left Foot of a Polydactylous Calf.

Generally when the digit corresponding to the thumb (D. I) is abnormally developed as in this case, there is always correlatively an excessive development of the other lateral digits (D. II and D. V)—or these are represented by little ergots which neither in volume nor conformation are distinguishable from normal claws. One, therefore, finds that this is a case of polydactylia of the thumb of the posterior limb limited exclusively to this digitated branch.

The two other lateral rudimentary digits (D. II and D. V) have the same degree of development as that of a normal specimen and are attached as usual as regards their cutaneous and skeletal parts. There is thus an exception to the general rule as regards polydactylia, namely, that the abnormal development of a reduced digitated branch follows that of the neighbouring rudimentary digits.

This observation, besides, constitutes an argument in favour of the thesis upheld by Lavocat with respect to the constitution of the metatarsus of domestic ruminants and of the ox in particular.

According to this anatomist this metatarsus is constituted in its principle part by the coalescence of two metatarsians (III and IV) into a cannon bone, in its accessory parts by two rough reliefs, lateral and posterior, to its proximal extremity, which reliefs are represented for it by the metatarsians II and V.

Lavocat recognised finally in a little flattened osseous disc at the postero internal part of the superior extremity of the cannon bone the representative of Digit I. And this also is the view of Lesbre. This bone sometimes ignored (Cuvier Meckel), sometimes taken for a cuneiform (Rigot, Rosenberg, Retterer), sometimes for a sesamoid (Franck, Martin) is precisely that which, in the case we describe, has taken on a considerable development and forms the metatarsian part of the internal digit (D. I), that is to say, the thumb.

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Abstracts of Current Literature.

DEPARTMENT OF AGRICULTURE, CANADA.

(Abstract from the Report of the Veterinary Director-General.)

DISBURSEMENT OF TUBERCULIN FROM THE BIOLOGICAL LABORATORY, OTTAWA, YEAR 1924–1925.

Month.	Tuberculin.		
	Subcutaneous	Intradermal.	Ophthalmic.
April	1,700	23,280	23,410
May	225	20,100	14,080
June	525	33,090	25,000
July	2,300	38,160	17,400

Month.	Tuberculin.		
	Subcutaneous	Intradermal.	Ophthalmic.
August	100	20,190	15,130
September	950	48,090	24,360
October	—	65,230	20,000
November	1,850	69,255	20,400
December	700	41,295	7,200
January	700	57,000	15,600
February	50	24,060	4,800
March	1,100	67,200	8,600
In 12 months ..	10,200	506,950	195,980
Total ..		713,130	

Bovine Tuberculosis.

There is probably no disease affecting either the human race or live stock that is better known, or that has caused so much study as tuberculosis. Our knowledge with regard to it is derived from many sources, and the danger and losses for which this disease is directly and indirectly responsible have never before been better recognised by those who are interested in the conservation and protection of the animal sources of our food supply.

Live stock breeders are now commencing to realise that it is a poor business proposition to maintain diseased herds and to purchase animals from questionable sources. The demand for tuberculosis-free cattle, and for milk from such animals, is rapidly increasing, and requests for assistance in eradicating this disease in individual herds and areas have been so numerous that it has not been possible to give them all attention. The importance of making the greatest possible progress in this work, with the money available for this purpose, cannot be overestimated, and it is, therefore, necessary to limit our control measures to those which permit of the greatest amount of work being accomplished at the least possible cost.

Experience has shown that the restricted area method gives the best results, it being possible to test a large number of cattle more expeditiously and more cheaply by this method than by any other. As all cattle of all classes within a definite area are systematically tested, reactors destroyed, and infected premises thoroughly cleansed

and disinfected, it provides a clean territory and reduces very materially the possibility of healthy cattle coming in contact with infection.

The compensation cost per head for animals tested is less under this plan than any other, and after the initial test is reduced more rapidly and remains at a lower cost. Sixteen thousand five hundred and fifty (16,550) cattle were submitted to an initial test in the Carman district, in the province of Manitoba, in the fiscal year 1922-23 at a compensation cost per head of $1.99, the following year it dropped to forty-two (42) cents per head, and during the year covered by this report the average cost per head was thirteen (13) cents, although the number of cattle in the area increased to 17,021 animals.

The initial test of 52,642 cattle in the Huntingdon area, in the province of Quebec, which was recently completed, cost $2.87 in compensation per head, and there is every reason to believe that this cost in subsequent general tests of all cattle in that area will decrease in a manner similar to that in the Carman area.

Under the accredited herd plan the compensation cost per head was $10.45 in the year 1922-23, $6.33 in 1923-24, and $3.97 in the past year.

The initial tests are the costly ones, and it is for this reason that there is not the same annual reduction in the compensation cost per head under the accredited herd plan as under the restricted area plan. Under the latter plan we are dealing very largely with the same cattle in a definite territory, while under the accredited herd plan initial tests of new herds, in widely separated districts, are being constantly undertaken.

The accredited herd plan is, however, a practical, workable and popular plan, and it is possible under its provisions to eradicate tuberculosis in herds and to maintain them free from this disease, provided the owner takes an active interest in cleaning up his herd and in protecting it.

Until it is possible to extend our tuberculosis eradication work very materially this plan is a useful one. It is limited to pure bred herds and gives the owners an opportunity to maintain sound herds. As cattle from these herds are being constantly sold to enter other herds for the improvement of stock, the cleaning up of these herds removes one important factor in the dissemination of this disease.

There are now 1,675 fully accredited tuberculosis-free herds in Canada, and 2,100 undergoing the process of accreditation. There are also 312 herds awaiting action, and requests for assistance under this plan are constantly being received. It has not, therefore, been necessary to enter into propaganda of any kind, as the greatest difficulty

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has been experienced in preventing dissatisfaction among live stock men whose herds could not be promptly accepted.

It was necessary to discontinue accepting municipalities under the Municipal Tuberculosis Order in 1923, because it was found that satisfactory progress in the eradication of this disease was not possible under its provisions. We are still, however, dealing with thirty municipalities, and while the cost may be justified from a public health viewpoint much greater progress could be made in the eradication of bovine tuberculosis if the money expended under this order were applied to restricted area or accredited herd work.

Many of these municipalities have been receiving assistance under this order for years, and it is still necessary to expend large sums of money in compensation for reacting animals. There is not the same gradual and permanent decrease in compensation payments as in our other policies, and it is not, therefore, a desirable measure from a bovine tuberculosis eradication standpoint.

Many cattle owners who could not comply with the accredited herd regulations have taken advantage of the supervised herd plan. No compensation is paid under this plan, reactors are destroyed and the owner receives whatever salvage the carcasses which pass inspection may bring. There are now one hundred and sixty-six (166) herds receiving attention under this plan ; 1,753 tests of these cattle have been conducted during the past year and 124 reactors have been slaughtered.

We have tested under these policies, since their inception, approximately 400,000 cattle, and 12.8 per cent. reacted, or approximately 51,100 cattle. During the past five years 10.97 per cent. of carcasses of reacting cattle have been condemned as fit for fertilising purposes only. As our policies cover the testing of all classes of pure-bred and grade cattle in all parts of this county, and as our meat inspection records for the past sixteen years show not more than 7 per cent. of rejections and condemnations for bovine tuberculosis, we may safely assume that approximately 12 per cent. of our cattle are affected with this disease.

A slaughter policy with the object of eradication in view, is not under the circumstances prohibitive, and it is most desirable that every effort is made to enable us to accept many more areas, in order that we may make permanent progress more quickly than the natural advancement of the disease. The area method enables us to make substantial progress, as it is possible to protect such areas from reinfection, and by a systematic selection of these areas clean territories could be established and our object eventually attained.

We are fortunate in that wonderful progress in the eradication of this disease is being made in the United States. The federal, state and county authorities, and live stock breeders, as well as the public health bodies, are co-operating in an enthusiastic manner with that object in view. They are not only working together, but are appropriating large sums of money for this purpose. It is, therefore, important that we make rapid progress, in order that we may overcome our economic losses, lessen the menace to our public health and retain our foreign markets. It is especially important, as experience has shown that this disease can be eradicated on this Continent without seriously interfering with the live stock situation.

In older countries, where this disease is much more prevalent than on this continent, the question of immunisation has been given constant attention for many years, and scientists have centred their efforts upon perfecting a vaccine for this purpose. The reports of the successful immunisation of very young calves with Professors Calmette's and Guerin's vaccine, in the past year, gave some of our breeders the impression that it should immediately replace our slaughter policies. While we welcome any new discovery which will in any way assist in controlling bovine tuberculosis, an immunising agent applicable only to healthy animals can only be of value as a preventive. It is further necessary to await its approval by authorities, as new discoveries must of necessity be carefully investigated and confirmed before they can be safely applied in a general way.

The pathologist's report, which follows, indicates that he took prompt measures to obtain a culture of the vaccine and that he is carrying on suitable experiments with it. If an extended trial of this vaccine in experimental animals under proper control confirms the claims of its discoveries, it will undoubtedly prove to be a valuable aid in maintaining tuberculosis-free cattle. In view, however, of the established facts with regard to the economic losses caused by tuberculosis, and its menace to our public health, it is not only important that we do not relax our efforts to eradicate this disease, but that we make still greater efforts to achieve our object. When the vaccine has been proved to be safe and effective an alteration in our policies may be desirable, but it would not be wise in the meantime to lay aside measures of known efficiency for one that has not gone beyond the experimental stage.

Fitch, Lubbehusen and Dikmans.—Eggs as Means of Transmission of Avian Tuberculosis.—*Journal of Amer. Vet. Med. Assoc.*, 1925, No. 1.

AVIAN tuberculosis is a matter of importance and is largely

prevalent. Generally it is assumed that it is transmitted by the dejections of infected fowls; in a few cases it has been pointed out that the eggs of tuberculous subjects constitute a method.

The authors made use of 62 fowls, of which 43 only were layers, which indicates that nearly 30 per cent. of tuberculous fowls, at all stages of the malady, do not produce eggs—876 eggs were examined; 367 by the process of culture in Erlenmeyer flasks and 509 by inoculations in guinea-pigs. The germ of tuberculosis was found in the substance of nine eggs from two different fowls.

It may therefore be concluded that less than one per cent. of eggs laid by tuberculous fowls contain living bacilli. The authors showed that chicks could be hatched from infected eggs, and that it was possible that an egg naturally infected would produce a tuberculous chick. The authors examined also the shells of 209 eggs laid by fowls recognised as tuberculous and soiled by the dejections. The shells were carefully washed in a sterile saline solution which was subsequently centrifuged; the sediment was inoculated intraperitoneally into fowls; in no case did tuberculosis arise.

As a general conclusion it may be said that the egg does not play any important part in the transmission of avian tuberculosis.

Bru. M. E.—Veterinary Surgeon, Lavaur—Intermittent Roaring, with Suffocating Symptoms, in an Ox.—*Revue Vétérinaire*, Nov., 1925.

Bru was called to a four-year-old ox that was bought on May 31st, and on June 30th showed nasal and pharyngeal snoring, slight respiratory trouble, difficulty in swallowing and ruminating and off food; water alone was drunk with ease. The bullock was tested with tuberculin with a negative result. The throat was blistered and pectoral powders prescribed. No improvement resulted and the state of the subject became very much worse.

Again called in, and at this time I found the temperature normal; general state as if the animal had not fed for some time, with tucked up abdomen. The most marked and most important symptom was roaring, which was most intense during mastication and was accompanied after swallowing by a pharyngeal cough. Compression on the throat excited roaring. The lung sounds were normal and the heart beats regular.

Exploration of the buccal cavity showed nothing abnormal, but forced traction of the tongue was resented and indicated slight inflammation of the larynx.

I administered about a litre of warm water containing half a pint of oil. Five minutes afterwards I made a second examination of the mouth, which was violently resented.

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The subject, on return to the cowhouse, made whistling and snoring sounds. He took a little food and the same phenomena reappeared. A quarter of an hour later I put a sack over the eyes of the patient and held a lighted candle in front of each nostril; at the left nostril the candle was extinguished at some distance away, at the right it burned normally without any flickering of the flame. In view of these symptoms I gave the diagnoses of a developing abscess in the right nasal fossa, or a foreign body, or a tumour; the youth of the subject made me rather inclined to the first view.

As treatment I advised drawing the tongue slightly forward and injecting the pharynx five or six times a day with a glassful of mucilaginous water containing honey and vinegar and oil, and to give two warm nasal injections a day into the right nostril. As diet, flour and bran gruel, green fodder, straw and warm drinks. Complete rest. After three days there was some improvement: deglutition and rumination were easy and roaring less pronounced. The owner came to me on the fourth day to ask if he could use the patient with his yoke companion for reaping, as he only had these two animals available.

At the third time of working he coughed violently, roaring became excessive, suffocating symptoms appeared. The animal was unyoked and brought in, where he refused all food and drink; his breathing was much accelerated and quite buccal and his tongue hanging out. He became much worse and asphyxia being imminent I advised slaughter. At the autopsy œsophagus and trachea were normal, a little lung emphysema was present, but otherwise abdominal and thoracic cavities showed nothing of note. After disarticulation of the head and inferior maxilla and removal of the tongue the opening of the right nasal fossa appeared completely obliterated and that of the left very much reduced. The partition separating the two orifices deviated and doubled back on its base, described an arc of a circle whose convexity projected into the left nasal fossa and reduced its orifice by about half. There was evidently a tumour in the right nasal fossa. After some trouble and with the aid of a whip handle I managed to bring out a tumour the size of an orange. The tumour was attached by a pedicle three or four centimetres wide to the floor of the nasal fossa on its internal side and about one centimetre from its opening.

The tumour was hard, resistant to pressure, its tissue greyish and firm. It resembled a naso-pharyngeal fibroma. It was unique in that mucous polypi are generally multiple. This is the first case of its kind I have seen in 27 years' practice.

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Lebailly, M. C.—Flies and Aphthous Fever.—*Revue Vétérinaire*, Oct., 1925.

CONTRARY to public opinion, flies play no part in the spread of foot and mouth disease. It is during the period of incubation in absence of all outward signs that the animals are capable of spreading the malady; they remain contagious only during the four days which follow the appearance of vesicles. In his investigations L. has taken the most rigorous precautions in order that during this period of contagion the malady cannot be transmitted by any other intermediary than flies. These had all facilities for flitting from a contagious to a healthy animal. In no case has the transmission of the disease resulted. These negative facts agree with the daily observations of the author.

Vion, M.—The Mammites of Dairy Cows.—*Thesis—Paris*, 1924. *Rev. Vét.*, Oct., 1925.

Two conditions are essential in order that a non-tuberculous mammitis may be curable.

1.—That the veterinarian be called in at the beginning of the malady.

2.—That the owner gives carte blanche to the practitioner to treat the case, *i.e.*, that he does not reproach him for paying repeated visits and treatment.

Mammites are *curable* in the sense that the physiological activity of the gland is recovered, at least partially, because the complications of septicæmia and gangrene are exceptional in our dairy cows. Treatment should be prophylactic and curative. The author is convinced of the efficacy of copious and repeated intra-mammary injections of 1 in 1,000 *fluoride of sodium* solution at a temperature of 100° F.

Kausch, L.—Living and Learning.—*Prager Archiv f. Tierheilkunde*, Part B, No. 4, April 15th, 1925.

QUACKERY still flourishes. It has its humourous side, but causes much animal suffering.

1. PIG.—To give it a dose of salts an iron pestle was put in its mouth, the tongue held fast, the head raised and the drench introduced. It was released, gave a few convulsive movements and fell motionless to the ground and was left there for two hours. When I was called I found left-sided inflammation of the lungs (drenching pneumonia)—post-mortem showed gangrenous pneumonia.

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2. HORSE.—Horse being treated for catarrh of the upper air passages. One day when calling I found plain rattling sound and all the signs of a fresh bronchitis. Being surprised at this I asked a few questions and learnt that after I had left a neighbour had been called in and he had announced that " the lungs must be cleared from within out," so some warm hare fat was given. The animal's head was fastened up to a tree and the fat poured down its nostrils. As it showed signs of suffocation it was released. After about three weeks it recovered.

3. COW.—I was called to two cows with hoven. One was already dead and the other surrounded by a crowd of helpers. The owner was at its head and in one hand he held an earthen vessel and in the other a crawling thing which vanished into the mouth of the patient. Another and then a third followed. As I looked I saw they were frogs and I stood speechless. Then I let him and the whole crowd have it. Later on I asked for his reasons for the action. He said, " The frogs enter the stomach and draw the gas up into themselves and the cow is thus saved." I told him that the butcher had a better cure than this. He could not be persuaded that his treatment was not A1 and had the audacity to affirm that perhaps in his haste he had not procured the right kind of frog.

4. COW.—Called to an in-calf cow, whose lady-owner gave the following history: The cow had often kicked at her belly as if in labour. She had, therefore, come for help as previously the cow had calved a few days before time. A butcher had also attended who diagnosed a twist of the womb and gave it as his opinion that delivery was impossible. Being anxious she sent for a handy neighbour and he, after examination, said " Give me a nail that I may open the calf bed. The cow has a very strong spasm and otherwise she will not be able to calve." This frightened the owner and she did not comply but sent for me. She related that the previous year a cow had been the same way and the neighbour had rent the womb with a rusty nail. There was no trace of commencing calving and everything was in order. After a few days the cow calved without any help at all.

Becker.—Symptoms of Colic in a Horse as a Result of Disturbance of the Olfactory Nerves.—*Berliner Tierarzthche Wocheurchrift*, June 19th, 1925.

A butcher had the woodwork of his two-horse stall done over with carbolignum.

Two horses were put in the stable on Thursday evening, and on Sunday night they both showed the same colicky symptoms. They were drenched in sweat, pawing with the fore-feet and quite off food.

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To me it seemed that there was a connection between the symptoms and the pungent smell observable. Peristalsis was in abeyance. Barium chloride was given and in half an hour large quantities of dung were passed. Ordered gentle movement in the open air and moving out of the stable.

The owner then used one horse that appeared quiet and put it back against my order in the carbolignum stable. In about half an hour he telephoned that the horse was as bad as ever again. It was shifted out of the stable and soon recovered.

Reviews

Statistical and General Report—Army Veterinary Services 1924-1925.
London : Harrison & Sons, Ltd.

THIS Report has been forwarded to us by the Director-General, Army Veterinary Services. It gives statistics as to the strength, wastage and sickness among the horses and mules of the various commands in Great Britain and Northern Ireland, of the British troops in Egypt and Palestine, and of the British Army of the Rhine. The Annual Report of the Royal Army Veterinary School, Aldershot, is also given. Out of an average strength of 13,404 horses in Great Britain and Northern Ireland approximately 23 per cent. are remounts purchased during 1924 and 1925. This caused a slight increase in inefficiency as compared with last year due to diseases associated with young and untrained animals.

Pustular dermatitis and strangles and catarrh seem to have been by far the greater causes of inefficiency. It would be interesting to know what the prevalence of pustular dermatitis is attributed to. So far as we can ascertain, it is not a disease often met with in large civilian studs. Affected animals cannot be worked. Attempts to immunise new purchases with anti-strangles vaccine were discontinued because results did not justify continuance. Vaccines were, however, used with great benefit in the treatment of protracted cases of catarrh and strangles. Cases of ringworm in a benign form and a few cases of fever and contagious stomatitis were quickly and successfully dealt with. The mortality from sand colic in Egypt was considerably reduced, due to measures adopted whereby the majority of horses were accommodated on prepared standings. 5,449 doses of subcutaneous and 4,260 doses of intradermal-palpebrol mallein were issued from the laboratory at Aldershot.

Journal of the Australian Veterinary Association.

THE receipt of the third number of the first volume of the Quarterly Journal of the Australian Veterinary Association is a welcome reminder of the progress the profession is making in that country. It further illustrates the desire of our Australian colleagues to possess an official organ worthy of the important position which the profession has attained in Australia.

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The Editor, Mr. Max Henry, is well known to us, and we are not surprised, therefore, that with the collaboration of a staff which includes some of the foremost veterinarians in Australia, he has succeeded in producing a journal which we feel confident is destined to occupy a prominent place in veterinary literature. Both the style and subject matter of this journal compare favourably with European publications of the same category.

The leading article deals with the Tuberculin Test in Cattle in relation to the recent Report of the Medical Research Council on the intradermal inoculation. The Report meets with some severe criticism, and the author questions the superiority of the intradermal over the subcutaneous method. Many veterinary surgeons will agree with the views expressed, for it would appear that it is in the standardisation of the tuberculin used rather than its method of application that a more definite basis for the interpretation of results may be reached.

Another article discusses Calmette's Ophthalmic Tuberculin Test applied to pigs. This method, according to the contributor, has proved highly satisfactory. We incline to the view that where pigs are concerned, the intradermal possesses distinct advantages over the ophthalmic method.

An article by Mr. Bordeaux, Lecturer in Medicine and Obstetrics, Melbourne University Veterinary School, on some affections of the reproductive organs, and another by Dr. Seddon, Director of the Glenfield Veterinary Research Laboratory, on botulism, appear. Dr. F. G. Cawston's instructive contribution on Fluke Disease, will be read with considerable interest by parasitologists, state veterinarians, and others who are called upon to advise measures in dealing with sporadic outbreaks of this disease.

The journal concludes with reports of the meetings of Veterinary Associations in different States, some pathological abstracts, and a list of recent appointments within the Commonwealth.

In 1923 New Zealand veterinarians formed an Association to be affiliated with that of Australia. We are disappointed to find no reference to this country's activities nor any record of progress of the profession in New Zealand. In an editorial note published in the journal under review we observe the following remarks: "It is claimed that unless some closer union between our units is effected there is a danger that the units will retain a narrower interest in the welfare of the profession, and an individualism which will tend to disrupt the organisation of the profession." We hope that this warning note may carry beyond the Commonwealth States across the Tasman Sea to New Zealand, and that the strong link which the Australian journal serves to forge may assist in more closely uniting our colleagues throughout the Empire.

H.A.R.

Galopeurs et Trotteurs. Hygiene—Elevage—Alimentation—Entrainement—Maladies. By Ed. Curot, V.D., Laureate of the Academy of Agriculture, Editor of *Jokey, Sport Universel Illustré, Revue des Eleveurs de pur sang*, etc. Paris: Vigot Frères, pp. 624, 72 illustrations and plans. 68 francs.

This is a book dealing essentially with racehorses, whether as gallopers or trotters. It is worthy of commendation, because it deals with a field

of veterinary import which has hitherto been none too well explored and explained by men of science, and because the author is a man of wide and expert experience who is used to expressing himself plainly and lucidly. With horses declining in number it is only appropriate that more attention should be given to a study of the valuable specimens that remain that as a class tend rather to increase than decrease. The book is divided into four main parts: (I) Breeding and Rearing, (II) Training of the Racehorse, (III) Pathology of the Racehorse and (IV) Trotting.

In Part I hygiene, feeding of reproducers, gestation, parturition and epizootic abortion are the subjects of special chapters. Sterility is well studied as befits its importance and prevalence (30 to 40 per cent.). Empiric methods are criticised and therapy based on the anatomy and physiology of the sexual organs is indicated. Artificial fecundation is explained and discussed, and growth and precocity from birth to adult age are graphically described and dealt with. The pathology of foals and the parasitic maladies that affect them are not overlooked.

Training is indicated under gradual and progressive effort, both as regards the limbs and the respiratory organs and one can well see that to get a racehorse into tip-top condition is a labour of patience and a work of art. There is a special chapter on doping, including the physiological properties of alkaloids, methods of using, clinical symptoms, harmfulness, medico-legal diagnosis, etc.

The third part deals with the illnesses and lamenesses most frequently seen in race-horses—articular, turdinous and osseous lesions are the dominating disabilities. The author makes a strong feature of the importance (from a sporting point of view) of diagnosis in these cases.

The fourth part of the book, dealing with *trotting*, is concerned largely with the matters requisite to preserve the equilibrium of the trotter. The training of the trotter, the signs of condition, over training, etc., are all discussed. The book is well illustrated and contains several reproductions from *Sport Universel Illustré*.

It is a mine of information on matters concerning racehorses and may be consulted with confidence by veterinary surgeons who practice in racing and training districts.

Animal Genetics. By F. A. E. Crew, M.D., D.Sc., Ph.D., F.R.S.E. 1925. London: Oliver & Boyd. Med. 8vo, pp. 420. 15s. net.

The science of animal breeding is of such importance to our profession that all Veterinary Surgeons will welcome this new text-book by the Lecturer in Genetics at Edinburgh University. Dr. Crew has written a lucid, comprehensive and easily followed book of some 400 pages which should be in the hands of all students of the subject. In his introduction Dr. Crew points out that " the art of animal breeding is far in advance of the applied science: the geneticist is not in a position to produce or to instruct anybody else how to produce finer specimens of farm stock than those which foregather at the shows." The methods used empirically by the breeder, however, are the same as those used scientifically by the

geneticist and the science is fast overtaking the art of breeding. The book provides a very effective summary of the present state of knowledge of this subject. After a preliminary historical survey, the Mendelian hypothesis and its material basis is considered. The reader is then led to study the question of sex—its determination and differentiation, and the control of the sex-ratio. Chapters on Exogamy and Endogamy, Fecundity and Fertility, Heredity and Disease, and on Disputed Beliefs complete a most educative book. There is an excellent bibliography and the work is well illustrated and printed. T.C.

The Erythrocyte and the Action of the Simple Hæmolysins. By ERIC PONDER. London: Oliver & Boyd. Med. 8vo. 12s. 6d. net.

THIS little volume of under 200 pages deals with the morphology of the red cells and the actions of the simple hæmolysins. It is divided into two parts. The first collects the known facts on the morphology of the red cells in the various groups of animals and forms a very useful summary on the subject. The second part, dealing with the action of the simple hæmolysins is written in a manner very difficult for the average, scientific reader to follow. The object of the series of monographs, of which this is one, is to present to such a reader the known facts in various branches of biology. Dr. Ponder rather defeats his own object, however by the lack of impartiality with which he marshals these facts and by the omission of evidence, only a criticism of which appears. The volume would also have been improved, making the bibliography effective.

T.C.

Report of the Veterinary Director-General for Canada for the Year ending March 31st, 1925. Published by the Dept. of Agriculture, Canada. Printed by F. A. Acland, Ottawa. 5 cents.

IN the interesting annual report, George Hilton, V.S., gives a comprehensive résumé of veterinary activities in Canada and, incidentally, he shows what great, good and valuable work is being done. An order was passed in August requiring certification against foot and mouth infection of hay, straw and other fodder used for packing purposes by other countries in sending merchandise to Canada. The enforcement of this order has been a very contentious undertaking, as it has been necessary to refuse entry of a large number of shipments, resulting in financial loss to the importer. Latterly, properly certified fodder-packed shipments are becoming quite usual, and this safeguard against infection is necessary. The restricted area method against tuberculosis is giving fine results. The compensation cost per head for animals tested is less under this plan than any other. The cost per head in one district has now been reduced to 13 cents. The initial tests are the costly ones. The Director-General considers that approximately 12 per cent. of Canadian cattle are affected with tuberculosis, but in restricted areas the percentage of tuberculous cattle as indicated by the tuberculin test has been reduced to less than one per cent. E. A. Watson, V.S., Chief Pathologist, has done some excellent research work and has been using some of Calmette and Guerins vaccine. Referring to vaccines he states that another year at least must elapse before the results can be ascertained and given out.

At present results are hopeful and a definite advance has been made towards successful vaccination. Anti-tuberculous vaccine is still in the stage for research and thoroughly controlled experiment and trial. Johnes disease has been found to exist in Jersey cattle in Canada. Malignant catarrh of cattle, sheep, fox and poultry diseases have been the subjects of enquiry and investigation.

The inspection of meat and canned food is admirably carried out in Canada and she earnestly endeavours to establish her place in the markets of the world on a quality basis. Canadian bacon won first place at the British Empire Dairy Show. One hundred and twenty-eight shipments of store cattle left the Dominion during the past year for Great Britain, and a veterinary officer went over with each shipment. G.M.

Correspondence

THE POSITION OF THE INDIAN VETERINARY SERVICE.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—

May I crave indulgence in order to make a few comments on the Editorial of the February number of the Journal regarding the Indian Veterinary Service ?

My views, as one interested in the Service, are not in accordance with yours and that makes me regret the more that I have to use a ***nom de plume***. I would not do so were it not for the fact that I am governed by certain regulations which forbid me to write signed articles.

It seems to me from a study of the pay list of the Indian Services, that the veterinary profession is paid on exactly the same time scale as the other technical services. After all, they cannot expect to get the pay or the promotion of the I.C.S., which represents the cream of our universities.

The only real grievance is that they have not a selective administrative post in each province.

They have not because probably there are too few of them. The head of the Agricultural Dept. has probably a dozen or more Imperial experts under him all doing specialist work, whereas in most provinces the veterinary officers are limited to two or three, and the head officer is simply *primus inter pares*.

If and when the I.V.S. develops to the extent of the other Services, they may, indeed would, have a just " grouse."

I wonder whose fault it is that the whole question of Cattle Husbandry, Animal Breeding, Dietetics, Milk Hygiene and so forth has passed from

the hands of the Veterinary Surgeon in India into that of the Agricultural Department. Had some or all of these subjects been retained by their proper administrators, then our profession would have had adequate grounds on which to demand expansion carrying with it higher paid posts.

The grievance about being a transferred subject is, I understand, more imaginary than real.

" Transferred " means that the control of the Department in question (there are many " Transferred ") will be subject to the voting control of the Legislative Councils *except with regard to the Imperial Officers.*

That means that the Imperial Officers are still sure of their pay, but that the public is going to take a greater interest in their work.

The veterinary profession in India, or elsewhere, must surely welcome such interest, for they know that where the public have the control of the money, the public will see that any Service doing good work will be adequately recompensed.

It is surely unwise for the profession to take up the ultra-conservative India-for-the-English view when the whole trend of modern thought is, rightly or wrongly, for an Indian Dominion.

We are, perhaps, rather less cocksure in our older ideas regarding the tragedies that were once thought to be inevitable on the granting of Home Rule. We are, surely, disillusioned in these archaic ideas by the evidences that are so startling in the other parts of our great Empire.

This is perhaps going beyond the point, and I will return to the grievances. From the wording of your Editorial, it might be thought that the I.V.S. had, alone of all the Services, been harshly treated by the proportionate pensions rule.

So far as I can understand, the I.V.S. got the terms it asked for in front of the Lee Commission, *i.e.*, the same terms as every other Service.

Under Para. 2 of Rules under Section 96B (2) and (3) Govt. of India Act, dated 16/1/24, all officers who were *selected for service* before January 1st, 1920, are eligible for Premature Retirement on Proportionate Pensions. Surely this must include all genuine cases of ex-service men ?

The appointment in Burma seems, on the face of it, quite wrong, but there may be another side to the story. As one who is interested in the I.V.S. and the R.A.V.C. in India, I have gone carefully through the official list of officers of the I.V.S. serving in Muktesar and in the Provinces.

I find that out of the 20 odd men appointed to the I.V.S. since 1914, only some four or five have taken the trouble to pass the very simple linguistic test demanded of them by the Government. In the 1924 list, men of admission dates of 1920 and even 1914 are shown as having neglected to educate themselves for the proper discharge of their duties. One cannot help wondering if that had any influence with the Powers that be, as it is an argument that has been brought forward against the Veterinary Surgeon in India. Nor can we overlook the fact that quite recently a very able veterinary surgeon retired from the I.V.S., took up other work and then, to many people's surprise, returned to his old Service. Did he go back voluntarily to " inadequate pay and intolerable conditions " ?

To hark back to our list of officers. We find there that men of 40 years of age are earning about £1,000 a year, have three or four months' leave

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each year, two years' study leave during their service, first-class passages to and from India for their wives and themselves four times in their service, a pension to come of between £500 and £600 a year, and in addition are allowed to do private practice. It reads "intolerable"—does it not? There is much more to be said, but there is a limit to the courtesy of our Editor, but enough there is to show that there is still virtue in the motto, "*Audi Alteram Partem.*"

Yours, etc.,

"ONE WHO IS INTERESTED."

ELECTRO-THERAPY IN CANINE PRACTICE.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—

The article in your February number on Electro-Therapy, by Mr. Middleton Perry, is interesting and instructive. It will be agreed that exploration into this field is necessary and that the results obtained so far justify the hope that improvements in (or cures of) some conditions which have hitherto resisted treatment will be effected by means of the influence of electricity.

My experience of high-frequency treatment extends only over a period of 16 months, so I write with no authority. The cases treated have been cases of paralysis in dogs, and some forms of skin disease, particularly the form of chronic eczema associated with thickening and corrugation of the skin. The results have on the whole been gratifying—some extraordinarily so—but my results have not been so uniformly good as those of Mr. Perry.

Certainly all the cases have not shown improvement.

I have made no attempt to treat a corneal opacity by the high-frequency method and should be grateful if Mr. Perry would be good enough to publish the exact mode of application in such cases.

Yours faithfully,

S. J. MOTTON.

Penzance.

February 18th, 1926.

Notices

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Gerrard 4646. Telegrams: "Baillière, Rand, London."

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